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Editorial comment appearing in the

TA KUNG PAO (大公報).

Edited by HSU Ying (徐盈)

(TN-No date)

POWER POTENTIAL IN NORTH CHINA

NEMOTO, Hiroshi (根本博), C-in-C of the Japanese forces in North China, after his four and a half months of plundering since the Japanese surrender, said to Dr. T.V. SOONG, who was then visiting Peiping, "You stripped us of our material power but not of our potential power". He said this on a certain day towards the end of last year (TN-1945).

The Japanese militarists certainly judged right. ~~Now~~ They realized that armed power alone cannot be depended upon. The proud German militarist, HITLER, who dreamed of conquering the world, is now dead. Despotie Japanese militarists have also hoisted the white flag in the Far East. However, it is a pity to see the plans and projects formulated during the war ^{by the Japanese} remain incomplete. It is extremely difficult to make plans and to carry them out. Even though these plans and projects were made by the Japanese for aggressive purposes, they can still be used now that peace governs the world.

Dr. SOONG acknowledged what NEMOTO Hiroshi said. And he began to make arrangements for the carrying out of the plans formulated by the Japanese. "However", Dr. SOONG said "those who believe nepotism and mamonism will not be moved by these rational facts". Such people fail to realize the potential power left in North China. Those who rely only on

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armed force alone do not realize the fact that the source of armed power comes from the exploitation of the enormous man-power and resources of a nation. Nothing should be wasted and the productive enterprises must have adequate care. To use the surplus war material for the acquisition of greater power in this atomic era is just a comical and childish idea.

What possesses the greatest potential power then? Besides organized man power, it is popularly known that the cheapest power is derived ~~from~~ water and anthracite. Anthracite is everywhere except that it is difficult to mine it.

The Japanese, after their invasion of North China, realized that electric power was the only means of mining an abundant supply of coal in North China. However coal cannot be used to operate generators because of its high cost and the great demand for it. The coal must be used only for fuel and as materiel for chemical research. If the situation necessitates the use of coal in generating power, the power plant must be built at the foot of the coal mine in order to use only the inferior grade of coal. The Japanese realized that water was the cheapest and most abundant source of power. They also realized that they could achieve their objective of invading China only if they utilized this enormous water power. It is regretful for the Japanese that such a task was not completed. In spite of the great efforts exerted only the primary survey part of the project was accomplished.

For the sake of the reconstruction of our own country China, we must not neglect to utilize the achievements already made. Several Five Year Plans in Soviet Russia would never have succeeded without the use of electric power. After World War I, the construction of the hydro-electrical power plants was one of the most important projects among the reconstruction

works in the United States of America. As to the water power, 20,000,000 K.W. can be generated from the Yangtze River and 10,000,000 K.W. from the Yellow River. The resources in North China are the nucleus for the industrial revolution in China. The world economy will also be affected if these resources are exploited.

Can water be controlled? TANI Saburo (谷三郎), an advisor to the Puppet Agricultural Bureau ~~and~~ an authority on Conservation of water in Japan, said that a systematic plan must be formulated in order to regulate the water power. Although it may be possible to install the equipment locally, these installations would not last long. To regulate the water for a longer period of time, a careful survey must first be made all along the river from its origin to its mouth. Complete and systematic plans must be made for regulating the shifting sands, the river-bed, and the building of the dam. Problems concerning irrigation, maritime navigation, and water reservoirs must be carefully considered in making these plans. We must not make the same mistakes made by other countries.

A careful plan must be made to utilize the water in North China to its fullest extent. At the same time, devices must be installed for the prevention of floods and drought. The shifting sand has been one of the most difficult problems in regulating the water in North China. As there is no means of controlling the shifting sands, it is almost impossible to regulate the water. The only method to deal with the shifting sands is to plant trees. Therefore, trees must be planted all along the river. Dams must be built for the general purposes of irrigation, power generation, water reservoirs, and to prevent floods. From the economic viewpoint and that of regulating the water it is beneficial to build dams. However, the

durability of the dam depends mainly on the amount of water conserved, the method of operation, the amount of sand that shifts in and the condition of the shifting sand above the dam. Success or failure of regulating the water is determined by the way the dams are built. When we consider all these difficult problems, we find that the establishment of a hydro-electric power plant is not a simple task. Every problem is so closely inter-related that the solution of one will affect the other.

The plan of Dr. SA Fan-ch'i (薩凡奇) (TN-Transliterated from Chinese) for the construction of the water-gate, dams and hydro-electro-power plants along the Yangtze River is now beyond its theoretical stages. As to the Yellow River, the Japanese Technicians' Group made a survey for over 10 years. The Specialists Committee of the former Puppet Far-Eastern Research Institute also investigated this river for more than three years. This great river in North China has flooded more than 1,600 times. It has caused over nine great floods since the foundation of the Republic of China, thus causing a damage of over a hundred million ruans. People in North China say that if the waters of the Yellow River can be regulated, peace can be obtained. They also say that the Yellow River is the "spendthrift" of China. The Japanese Technicians' Group underestimated the difficulties involved in such an epoch-making enterprise such as the control of the Yellow River waters. When this group of Japanese specialists faced repatriation, they expressed their desire to remain in China, in order to continue their work of regulating the waters of the Yellow River for the benefit of China. They insisted on constructing an embankment named after "Generalissimo CHIANG" at San Men Hsia (三門峽). Thus arousing the interest of the Chinese, and especially that of the American

During the period between 1940 to 1945, the Japanese planned to increase electric power to 550,000 K.W. however, ^{they} were only able to reach 465,000 K.W. which is 80% of their goal. They later formulated a 15 year plan. In this 15 Years-Plan, their aim was to attain 6,590,000 K.W. of power of which 2,490,000 K.W. would be by coal power generation and 4,000,000 K.W. by water-power generation (TN-The two figures add only ^{to} 6,490,000 K.W.-obviously a typographical error. One of the figures should read 2,590,000 K.W.). Originally, there were coal power plants generating approximately 112,000 K.W. in Peiping, Tientsin and Tangshan (唐山). If this could be connected with the hydro-electric power plants along the Great-Wall, the power system in East Hopei, North Shansi and North Hopei would become unified. The success or failure of this task depends upon the way in which the specialists in our country endeavour to achieve their goal. The generating capacity of the power plants in the delta area of Peiping, Tientsin and Tangshan is only 70,000 K.W. During the last 5 years the Japanese installed a generating system for 104,000 K.W., a transformer for 38,000 K.W. and a power transmitting line for 80,000 K.W.

According to a report made by the North China Electric Company, which was operated by the Japanese, the ideal places for the establishment of the coal-generating power plants in North China are as follows:

1. Tientsin, Peiping, Tangshan areas and the delta area centering around Tangshan.
2. Tsu Chuan (淄川), Po Shan (博山) and Tsinan (濟南) areas, centering either at Po Shan or Shin T'ai (新泰).
3. Ch'ih Hsien and Liu Ho Kao (漯河) areas, centering at Ch'ih Hsien.

4. Ching Ching (井陘) and Hsih Chia Chuang (石家莊) areas, centering at Ching Ching.
5. Area between T'ai Yuan (太原) and Yang Chuan, centering at the Hsi Shan Mine-field.
6. Ling Hsih (靈石) and Huo Hsien (霍縣) areas, centering at Fu Chia Chuan (富家川).
7. Kalgan and Hsia Hua Yuan (下花園) areas in Chahar Province, centering at Hsia Hua Yuan.
8. Ta T'ung area, centering at the Ta T'ung Mine-field.

The ideal places for the establishment of hydro-electric power plants are as follows:

1. 8,818,000 K.W. could be generated in the areas along the Yellow River.
2. 249,000 K.W. in the areas along the Luan River (灤河).
3. 244,000 K.W. in the areas along the Yung Ting River (永定河).
4. 270,000 K.W. in the areas along the Ning T'io River (寧波河).
5. 44,000 K.W. in the areas along the Pei Chu Ma River (北拒馬河).
6. 24,000 K.W. in the areas along the Pai River (白河).
7. About 30,000 K.W. in other areas.

The above figures add to over 9,640,000 K.W. which is nearly ten million K.W. If this were combined with the power generated by the coal-generating power plants, it is possible to form one of the largest power-plants network in the world. Only the estimated figure of hydro-electrical power is already greater than the total amount of power generated in the North-east, which is 7,700,000 K.W. and of the power generated in Korea, which is 6,600,000 K.W. This vast plain in North China which covers an area of 10,000,000 square kilometers is undoubtedly a base for our

national reconstruction. For this reason North China must not become a battlefield.

CAN THE YELLOW RIVER BE CONTROLLED

Studying the report made by the Japanese, the following explanation can be found concerning the Yellow River hydro-electrical power.

The Yellow River originates at a point 1,000 meters above sea-level. The difference in height above sea-level between the point of origin of the Yellow River and San Men Hsia (三门峡) which is located below Meng Chin (孟津) is 880 meters.

The Yellow River causes floods which menace the farms and destroy all the installations which are set up to prevent such floods. Due to the small amount of precipitation in North China the river does not usually rise to any great extent. The annual flow of water of the Yellow River is 46,000,000,000 cubic meters, while in the Sungari River, whose length about one-half of the Yellow River is 77,000,000,000 cubic meters. If the Yellow River could be controlled it would bring about most valuable results.

NAKAJIMA, Kenkichi (中島健吉), an engineer for the North China Development Company (北支開發會社), is the one who has been surveying the Yellow River for a long period of time (he began his survey when he was employed by the South Manchurian Railway Company before the war). The Electric Company in Peiping made a survey of the Yellow River in 1940. In June 1941, the North China Development Company also made a general survey of this river and in 1943, this company made a cartographic study of the river. The amount of water has been recorded every day in

Pao T'ao (包頭) since 1939. The amount of the shifting sand has been recorded since 1941. In the report, which consists of over 580 volumes, a detailed hourly account of the movement of the water during the flood and freezing seasons is given, since the amount of water changes according to the thickness of the ice. The surveying was still in progress along the upper part of the Yellow River, when the Japanese surrendered last year.

The Japanese specialists consider San Men Hsia which is located at the lower part of the river as the best place to construct the dam. The width of this ^{part of} river is 300 meters and is made up mostly of plutonic rocks. The gradient of this rocky region is 12 degrees which is ideal for the construction of a dam. Floods in the lower branches of the river would be prevented if a dam were to be constructed at this point. 30,000 cubic meters of water per second flows in the river. Therefore if the dam were constructed, 10,000 cubic meters out of 30,000 cubic meters would be preserved and the rest of the water would flow as usual.

The bigger the dam, the more the hydro-electric power and more water for irrigation. The construction of a dam with a capacity of 21,000,000,000 cubic meters of water and a flow of one-tenth of this capacity would be completed within 10 years. Mr. NAKAJIMA, after his three years of surveying this river at the northern bank region at the Shansi border, completed the primary cartographic results. A dam must be constructed in the upper part of this river near Pao T'ao and Lamawan (喇嘛灣), for the purpose of maintaining a definite amount of water in order to facilitate inner river navigation. When an investigation was made in the area between Pao T'ao and Ch'ingshui River in 1940, it was found that Lamawan which is located

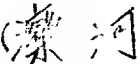
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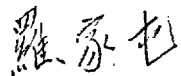
construction of the dam. The gradient of the Yellow River bed at this ~~point~~ ^{point} is very small. The difference in height between the lower and upper river beds is only 700 to 900 meters. Therefore, no dam of high embankment is necessary at this place.

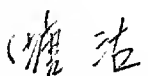
Another reason for the construction of the dam is to prevent the water from flowing into the sea without contributing anything to the welfare of the people. No better places can be found to utilize the water as in San Men Hsia or in Lamawan in the areas along the Sungari River or Yalu River. The most favourable condition in these two areas is that there is ample limestone and raw materials for the manufacture of cement. Another is that the communication facilities are very well developed. 1,200,000 cubic meters of cement would be sufficient to construct a dam to conserve 20,000,000,000 cubic meters of water in San Men Hsia. 500,000 cubic meters of cement would be sufficient to construct a dam for the conservation of 25,000,000,000 cubic meters of water in Lamawan. 1,900,000 cubic meters of cement was used in constructing the Feng Man Dam (豐滿貯水池) for conserving 10,000,000,000 cubic meters of water in the Sungari River area, and 3,200,000 cubic meters of cement was used in constructing the Suiho Dam (水豐貯水池) for conserving 11,000,000,000 cubic meters of water in the Yalu River area.

One of the most serious shortcomings of the Yellow River is its shifting sands. Water power will gradually decrease with the accumulating sands as the years go by. For this reason, a dam must be constructed in the upper region of this river and another one even closer to the point of origin of the river, in order to regulate the shifting sands. The Japanese also have stressed the importance of having two dams along this river, one in the Lamawan area and the other in the upper region of the river. Having a dam

in the Lamawan area, it can be used when the water power in the San Men Hsia Dam decreases due to the accumulation of the shifting sands. The accumulated sands in the San Men Hsia dam can be removed while the Lamawan Dam is being used.

The Luan River () is one of the largest rivers but causes few floods in North China. 150,000 h.p. of power can be generated from this river. In the lower region of this river there are 1,800,000 MOUs (1W-6.6 mous equal to 1 acre) of land which needs irrigation. Therefore in view of the demand for power in Peiping and Tientsin, for the irrigation of the lower region ^{around} of this river, and for the power needed in the large industrial plants in Tangshan, the construction of a hydro-electric power plant along this river would undoubtedly prove beneficial.

The investigation of the depth and current of this river has not yet been completed. However, the carto-graphic work of the area of Lochiat'un () was completed and the construction of an embankment in this area was decided upon. The construction work of the embankment was to begin from the East Hopei area. By doing so, the demand for water in the industrial area of Tangshan will be met, and will enable the Tangshan industries to expand to the sea-shore area. This will also cause the rapid development of the coal, salt industry and commerce in this region.

Floods in the area between the Peiping-Hankow Line and Tientsin will never be controlled unless the waters of the Yungting River are regulated. Because of the floods about 27,000,000 cubic meters of mud and shifting sands cover this area every year. Sometimes when the area was inundated by heavy floods, the river mouth area below Tangku () was greatly affected. A plan was drawn up by the former North China Conservation

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Committee (華北水利委員會) to construct a dam in the area around Kuan T'ing (官廳) and T'ai Tze Lu (太子壩) for the purpose of preventing damages caused by floods every year, for the establishment of irrigation and for the construction of an hydro-electric power plant. The Japanese also purchased the necessary generating-power machineries for the construction of the hydro-electric power plant. An estimated power of 140,000 K.W. was to be generated by the use of this machinery. Machinery was also purchased by the Japanese for the generation of 70,000 K.W. in Inner Mongolia and Chahar areas, however it is still missing.

The Ning T'o River (寧河) in North China contains the least amount of shifting sands. The Japanese already completed an irrigation project for an area of 520 Kilometers in Tung Yeh Chen (東台鎮). A large dam can be constructed in Tung Yeh Chen, but it is said that a great quantity of power cannot be generated by such a dam in this area. Due to the complicated geographical features the work for the construction of the dam was never begun. Further, the construction of the dam would cause damage to the upper region of the river, but it will benefit the region below the dam.

Mr. NAKAJIMA, a surveyor of the Yellow River power, specifically pointed out the significance of the following matters. He said that success in regulating the Yellow River waters would bring prosperity to China. In order to enrich the country and promote the welfare of the people of China, the Yellow River must be controlled. Politics in the government is for the benefit of the people, so is the control of the Yellow River waters. It is hoped that the specialists in China will be able to continue

the work.

Electrical power presents the most complicated problems. The following four points are presented to justify the delay in the work of constructing the hydro-electric power plants:

1. The water has 'corrosive' qualities. Therefore an analysis of the water used in the generating of power is necessary.
2. The supply of coal and its fuel value are very important and the installation of coal generating power plants depends on the supply of coal.
3. Skilled workers are not easily obtained.
4. Good construction material is hard to get. Pipes are easily broken in the turbine.

70% of the electric power in North China is consumed by the factories and the remaining 30% for lighting purposes. The re-equipment of the machinery and the expansion of the installations must be done at the same time. As to the hydro-electrical power plants, construction must be started at one of the places already surveyed. As to the coal-generating power plants, they must be built at the foot of the coal mines in order to utilize the waste coal. Five to fifteen per cent of the coal output at the various mines is "waste coal". Moreover, the 'waste coal' has no market value. A million tons out of 10,000,000 tons of the HAILAN Mining Administration's total coal output is "waste coal". With this amount of 'waste coal', 700,000,000 K.W. to 1,000,000,000 K.W. can be generated. The plants and installations in Hailan were taken over by the Chinese Communist Party. The Resource Control Committee of the Government formed the North China Electric Power Company in Hopei. The Committee put out the following report in the electric industry in China (Manchuria and Formosa not included).

1. After the Ministry of Economic Affairs took over the former Puppet North China Electric Company, a report on this company was compiled and sent to the Central Government by the Enemy Property Administrative Bureau. Then, merging the power plants in Peiping, Tientsin and Tangshan, the buildings and the business equipment of the company, the Resource Control Committee formed the North China Electric Power Company on 1 March of this year. The head-office of this company is located at Peiping, with branches in Tientsin, Tangshan and Peiping. The head-office manages all matters concerning the generation and transmission of the power in general. The branch offices administer matters concerning the distribution of the power in specific localities. CHANG Chia-chih (張家祉) was appointed general manager KUC K'e-ti (郭克己) and HSIUNG Tsu-t'ung (熊祖同) as acting general managers to administer the affairs of the company. KUC K'e-ti was also manager of the Peiping Branch Office. KU Ching-ts'eng (顧敬曾) was appointed as manager of the Tientsin Branch Office, and LIU Tz'e-min (劉澤民) as the acting manager of the Tangshan Branch Office.

2. This company supplies power to the Peiping, Tientsin and Tangshan areas. With ~~the~~ present equipment the maximum generating capacity is 112,400 K.W. However, due to faulty conditions of the machinery, only about 70,000 K.W. is being generated at present. There is a shortage of approximately 7,000 K.W. in Peiping and approximately ~~1,000 K.W.~~ ^{1000 to 2000 kw} in Tientsin. Only in Tang-

shan, is there a surplus of about 8,000 K.W. An acute shortage of power is being felt in North China. At present, extensive work is being carried on in expanding the installation of the Hsihchingshan Power Plant in order to generate 25,000 K.W. A trial operation of this new machinery will be made sometime in June. The authorities also ordered from Japan the various parts of the machinery needed for the power plants. A plan for the expansion of the power plants in both Tangshan and Tientsin is being drawn up. To carry out these plans, the North China Electric Power Co., has invited DRAKE, RICE, and MACGAFFIC, engineers of the Peter's Engineering Co (畢德工程公司) in America, in addition to its own engineers. These three Americans are now surveying the various localities.

3. Conditions in Peiping, Tientsin and Tangshan are as follows:

<u>LOCALITIES</u>	<u>MAXIMUM GENERATING CAPACITY</u>	<u>POWER GENERATED AT PRESENT</u>	<u>NEED FOR POWER AT PRESENT</u>
Peiping	30,000 KW	22,000 KW	29,000 KW (Shortage of 7,000 KW)
Tientsin	57,400 KW	38,000 KW	39,000 KW (Shortage of 1,000 KW)
Tangshan	25,000 KW	17,000 KW	(includes the need in Hank'u (漢口) and T'angk'u (塘沽) 9,000 KW) (surplus of 8,000 KW)

According to the figures given above, the shortage of power is acute. Furthermore, the demand for power will greatly increase as the industries in North China develop. The North Hopei Electrical Power Co. is also facing the same situation. In addition to the re-equiping of the Hsihchingshan Power Plant to generate 25,000 K.W. the power plants

in Tientsin to generate 30,000 K.W., and the power plants in Tangshan to generate 60,000 K.W., hydro-electric power plants should be constructed at Tsuhsingkuan (紫荆關) along the Feichuna River and L'ochiat'un (羅家屯) along the Luan River. The electric power network in the area of Peiping, Tientsin and Tangshan would be greatly expanded with the completion of these plans. It will become one of the most important power-base in North China and it will greatly hasten the development of industry in general.

According to a report made by the Japanese specialists, the following incompleted works in the various localities should be completed as soon as possible.

- 1) The generators for 15,000 K.W. in Tangshan can be operated with the installation of a 170 tons boiler.
- 2) The generators for 24,000 K.W. in the Hsiahuayuan (下花園) Power Plant generate only 12,000 K.W. In order to get the full generating power a 140 tons furnace must be installed as soon as possible. Water can be used for power generation. There is also abundant coal around this place which can be used for generating purposes.
- 3) The generating capacity of the generators in Taiyuan (太原) is 5,000 K.W., but due to the lack of a 25 tons furnace, only 2,500 K.W. is being generated.
- 4) Although there are two generators in MISHUI (微水), they are not operated due to the lack of pipes to be attached to the furnace and the lack of some other equipment. (The only steel plant which can produce steel pipes is the CHINA Steel Works

in ANSHAN (鞍山). However, a greater part of the

machinery was removed.

With the reconstruction of the electric industry, all the industries including mining and light-industries will return to normalcy. Bronze and aluminum are the essential materials in the electrical industry. Two hundred tons of bronze are needed every year for the manufacturing of wire. Therefore, work must be started at once in Tientsin to produce a sufficient amount of bronze. The supply of aluminum is even less than that of bronze. It might be possible to meet the demand for aluminum if there were no necessity of supplying the airplane industry. It is also difficult to obtain and train engineers and workers. As the electrical industry progresses, there will be a great demand for engineers and skilled workers.

Electric power is the mother of all industries. Without this power, hardly any industry would be developed.

The Japanese specialists handed over the complete set of their reports on the surveys made along this line to the Chinese authorities. The Japanese said, "400,000 to 500,000 k.w. may be an extraordinarily great figure in China, but these are by far smaller in comparison with the figures in America and Great Britain. China must rid itself of this inferior status as soon as possible".

As to the construction of hydro-electric power plants, it is still far from realization. The utilization of waste coal and betterment of the furnaces were emphasized. However, the question was raised as to whether or not a mixture of anthracite and bituminous coal can be used in the coal generating power plants.

It is also a question of whether or not the mine companies alone can provide the necessary equipment for the mining industry.

company to establish power plants and furnish its own power. It is known that a crushed form of anthracite and bituminous coal of an inferior quality can be used in the power plants, thus greatly facilitating the work and saving coal of better quality.